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LIGHT EMITTING DIODES WITH IMPROVED LIGHT EXTRACTION
EFFICIENCY

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ABSTRACT OF THE DISCLOSURE

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Light emitting devices with improved light extraction efficiency are provided. The light emitting devices have a stack of layers including semiconductor layers comprising an active region. The stack is bonded to a transparent lens having a refractive index for light emitted by the active region preferably greater than about 1.5, more preferably greater than about 1.8. A

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method of bonding a transparent lens to a light emitting device having a stack of layers including semiconductor layers comprising an active region includes elevating a temperature of the lens and the stack and applying a pressure to press the lens and the stack together. Bonding a high refractive index lens to a light emitting device improves the light extraction efficiency of the light emitting device

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by reducing loss due to total internal reflection. Advantageously, this improvement can be achieved without the use of an encapsulant.

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